

The Bradford College

ARCHICAD 19 Signature Building



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The Bradford College David Hockney Building's design is centered around the College's vision of creating a space that encourages and supports innovative forms of teaching and learning.

Project background

In 2008, the College embarked upon a comprehensive redevelopment strategy funded by the Learning and Skills Council. In 2009, the LSC withdrew the funds and the College was forced to reconsider their strategy with a majority self-funded project within a volatile and challenging marketplace. With assistance from Bond Bryan Architects, the College boldly devised a reduced scale development that, at its core, retained the original aims of embracing educational transformation within a truly flexible environment, while realizing efficiencies in space utilization and providing flexible-use spaces to accommodate changing learning methods.

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The development is approximately 24,000 sqm (258,000 square feet) with a construction cost of approximately £38m (US\$59m). This represents outstanding value for money. At the outset of the construction works, the team were challenged to save £2m (US\$3m) of Value Engineering. Neither quality nor vision was diluted thanks to a strong team approach from all, with elements of the project actually becoming enhanced by a collaborative approach to value engineering. The exceptional quality and workmanship achieved by the subcontractors throughout is indicative of this process.



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Design concept

Externally, the development draws upon the historic precedents set by the mill buildings situated within Bradford, while seeking to create an economic solution with locally sourced (Brighouse) natural sandstone. It pays homage to the textile industry of Bradford by replicating the concept of a fabric weave within the colored segments of the elevations. This was created using an innovative cladding system that allowed the builders to achieve water-tightness more quickly and was less labor intensive on site.

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- Rob Jackson, BIM manager and Associate Director

Internally, the scheme was viewed as a single entity collaborative heart space, surrounded by specialist teaching zones. This required a move away from traditional, teacher-led styles of delivery in smaller cellular classrooms, and into larger, more flexible spaces that offer a range of potential learning environments.

Materials

Inherent sustainability was a key component of the design and the supply chain were involved from an early stage. Lean construction workshops helped create efficiencies but also fostered an environment of collaboration. The traditional concrete frame was re-designed as a post-tensioned solution saving a third off the concrete. This also reduced the amount of deliveries to the site. All timber used was from registered sustainable sources where possible, including the plywood hoardings that enclosed the site - these were used for shuttering the retaining walls in the external works scheme. Other systems of construction were chosen with sustainability in mind.

The Building Research Establishment (BRE) carried out a pre-demolition audit on the existing buildings to be demolished in order to identify all opportunities for recycling or re-using materials. 98% of the existing buildings were identified as re-usable or recyclable.

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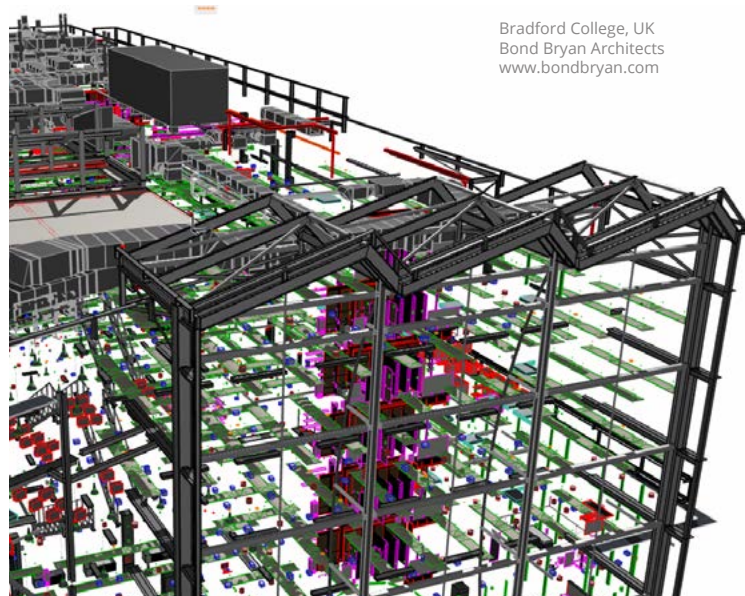
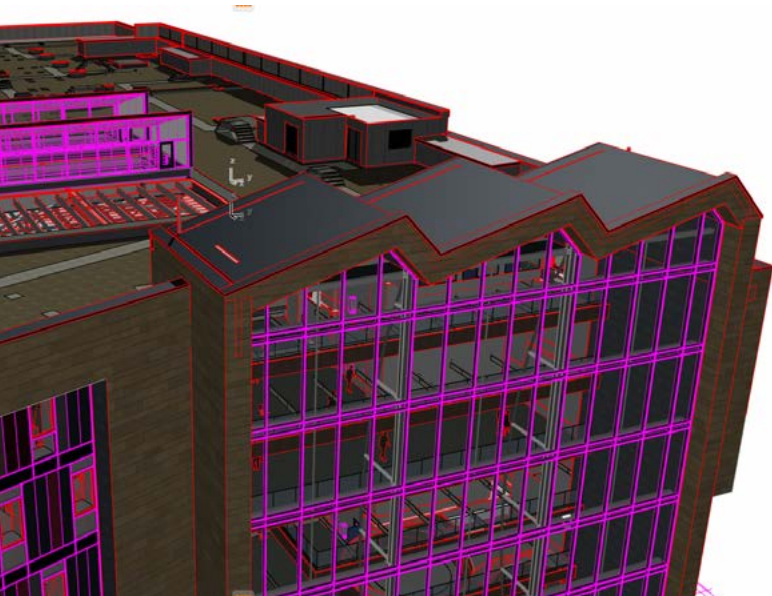
OPEN BIM approach

Since 2012, Bond Bryan Architects have focused on using open data rather than native data, as they see it as an important part of their future and for the future of the construction industry as a whole. Open data will lead to greater consistency and quality for those wishing to use data for their own needs.

Producing consistent, high quality models and data for others to use has been the company focus for the past several years. The real implementation was driven by the Bradford College project. The aim was to demonstrate open workflows on a live project as well as to establish more consistent data deliverables for use by contractors, consultants and clients. Working with the contractor, BAM Construct UK, Bond Bryan Architects immediately identified a number of issues with model exchange using the IFC open format. Within the firm, the central BIM team supported the project team to initially find temporary solutions to these issues. This was followed up with more detailed research to understand and finally resolve them. The architects collaborated with BAM and other vendors to find permanent solutions.



Centering the whole approach around IFC also influenced the firms' development plan for COBie, the UK Government's data deliverable from 2016. “Given the plethora of software available, the most logical way to deliver this data is using IFC,” Rob Jackson, BIM manager and Associate Director, says. “Throughout the Bradford College project, we discussed with BAM their data needs and began to understand



how COBie could be integrated. This has resulted in us building in data as a standard deliverable for all new projects rather than an added extra. There is still some way to go to fully integrate but we continue to work with vendors to further integrate the remaining requirements. We are now delivering 60-70% of the requirements of COBie due to our commitment to IFC, and this is allowing us to show others how they can benefit from our data."

Learning from the experiences of working on the Bradford College project, Bond Bryan Architects integrated the lessons learned into the model authoring tool templates. Their knowledge has led to the BIM Manager, Rob Jackson, to be asked to join the buildingSMART Technical Group and the AEC (UK) BIM Committee, which helps develop technology implementation guidance. Their extra effort also led to them assisting GRAPHISOFT in the development of a UK&I specific ARCHICAD template released in 2014. This work not only benefitted this project, which was completed ahead of time, but also had wider benefits for the industry by sharing the knowledge and feedback to vendors and ultimately resulting in improvements in software solutions.

In 2014, it became evident that once outputs were standardized, it was also necessary to find a way to ensure the data was correct. In September 2014, the firm introduced Model Checking for new projects. This validation has been built around IFC (ISO 16739:2013), COBie-UK-2012 and the RIBA Plan of Work 2013. The firm is now updating this to incorporate further with the requirements of BS 1192-4:2014.

The general needs of this development prove that new projects being fully collaborative with BIM is simply becoming the norm rather than an added extra.

Visualization of Bradford College

Bond Bryan Architects' models are constructed using GRAPHISOFT ARCHICAD as well as a variety of software to produce digital visualizations including Autodesk 3DS Max, Lumion, GRAPHISOFT BIMx, GRAPHISOFT ARCHICAD, Abvent's Artlantis, and MAXON Cinema 4D.

The original visuals were produced in-house between March 2012 and June 2013, while the photographs were taken, also in-house, in August 2014. The original models were produced in GRAPHISOFT ARCHICAD 15 and visualizations were produced in Autodesk 3DS Max.



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Client Satisfaction

The design team, client team and the main contractor adopted a pro-active approach throughout the project that resulted in very few issues arising during the entire construction process. The fact that an additional project, Bradford College Advanced Technology Centre, was awarded to the same design and delivery team is testament to how satisfied the client was with the build process.

The College occupied the building in September 2014, and have reported benefits of reduced staffing costs, improved team working and student supervision along with improved student achievement levels.

The project was not only highlighted as an example for innovation in education space but also as a pathfinder project for BIM for the entire team. Bond Bryan Architects were recently recognized as “heroes of interoperability” in the buildingSMART2014 global awards.

About Bond Bryan Architects

Bond Bryan Architects are a UK-based practice with design studios in London, Sheffield and Kent, plus representatives across the globe, with work embracing the worlds of Strategic Property Advice, Masterplanning, Architecture, Landscape Architecture and Interior Design. Their 120-strong workforce is highly skilled and experienced, with all their senior staff having been with them for at least four years and the majority over ten.

Bond Bryan Architects have used the BIM authoring tool, GRAPHISOFT ARCHICAD, for over 20 years and are recognized leaders in the field of Building Information Modelling (BIM).



GRAPHISOFT® ignited the BIM revolution in 1984 with ARCHICAD®, the industry first BIM software for architects. GRAPHISOFT continues to lead the industry with innovative solutions such as its revolutionary BIMcloud®, the world's first real-time BIM collaboration environment, EcoDesigner® STAR, the world's first fully BIM-integrated "GREEN" design solution and BIMx®, the world's leading mobile app for BIM visualization. GRAPHISOFT has been a part of the Nemetschek Group since its acquisition in 2007. Please visit www.archicad.com to see the most important milestones in ARCHICAD's 30-year history.

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